Draft

PRELIMINARY ASSESSMENT
NORTHWEST 20TH STREET INCINERATOR
DADE COUNTY, FLORIDA

FL

Prepared By:

Florida Department of Environmental Protection
Division of Waste Management
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Technical Review Section
Site Screening Superfund Subsection

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Site:

Northwest 20th Street Incinerator
950 NW 20th Street
Miami, Dade County, Florida

EPA ID Number:

FL#

1.0 Introduction

This Preliminary Assessment (PA) report was prepared by the Florida Department of Environmental Protection's Site Screening Superfund Subsection Staff pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). The purpose of the PA was to gather and evaluate available file information, to determine the potential for a release of hazardous substances into the environment, and to assess pathways that may be affected by the site. The information presented in the PA was used to determine whether or not a CERCLA site investigation is warranted at the site pursuant to Superfund regulations.

2.0 Site Background

2.1 Location

The site is located at 950 NW 20th Street, in Miami, Dade County, Florida [1-4]. The approximate latitudinal and longitudinal coordinates of the site are 25° 47' 39" N and 80° 12' 38" W., respectively[1,3]. The site can be reached by following I-95, to the SR-836 west exit toward the Airport/UM / Jackson Medical Center; merge onto SR-836 W/Dolphin Expressway (portions toll); proceed to the SR-933/NW 12th Ave exit toward medical/civic center; keep right at the fork in the ramp; then merge onto NW 12th Ave/SR-933 N; turn right onto NW 20th St; and continue 0.3 mile[8].

2.2 Site Description

The site comprises a 4 block area, which was formerly occupied by a municipal incinerator and a series of ancillary ash landfills. The site is currently occupied by the City of Miami Public Works and extensions of the Miami Dade Community College (MDCC) and

Jackson Memorial Hospital (JMH). Specific elements identified within those extensions comprise the MDCC Medical Center parking lot on the eastern half of the site and the JMH Logistics Center and City of Miami Motor Pool garage and warehouse/shop on the western half of the site[4 (Fig. 1), 5 (Fig. 2), 7 (Fig. 2)]. Most of the site is presently covered by buildings or pavement. Surrounding properties are occupied by businesses on the west, the majority of the JMH complex on the south, the MDCC medical center campus on the east, and various industrial and commercial properties on the north[1,7 (p. 7),12].

2.3 Local Climate

The local climate is subtropical with an average temperature of 75.5° F. Average temperatures for the months of January and August are 67.2 and 82.9°F., respectively[8]. Average annual, 2-year/24-hour, and net precipitation are 59.8[8], 5.5[9] and 6[10] inches, respectively.

3.0 Site History

3.1 Operational History

The City of Miami operated a municipal incinerator and ash landfill on the subject site from the 1930's to the 1950's[6 (p. 1), 7 (p. 1)]. The incinerator was located on the western half of the site, directly northwest of the Jackson Memorial Hospital. The municipal incinerator was engaged in waste volume reduction. Resultant ash was deposited on the east side of the property. The incinerator ash and other debris were evidently deposited in trenches throughout depths ranging from 2-11 feet below land surface, then covered with fill[7 (p. 2 & Appendix B)].

The eastern half of the site was also used by the City for maintenance of vehicles/equipment, as well as vehicular refueling[7 (p. 1 & Fig. 5)]. Three buildings, a vehicle refueling station, a petroleum underground storage tank (UST), and a grease trap have been removed[7 (pp. 1;4,5; Fig. 5)].

The City of Miami Public Works Department presently operates a vehicle maintenance facility on western half of the site. The eastern half of the site is currently owned by MDCC, which uses the property as a parking lot for the MDCC Medical Center[7 (p. 1; Figs. 2 & 3)].

3.2 Regulatory/Permitting History

On 11/2, 11/4, and 11/20/93, soil samples were collected from 3 locations on the eastern half of the site. Each sample was collected from a depth of 10-15 feet below land surface. Subsequent Toxicity Concentration Leaching Procedure (TCLP[1]) analyses revealed 2.835

[1] The Soil Cleanup Target Levels (SCTLs) used in this report are used for comparison only. The SCTLs apply only to the cleanup of contamination at sites that are governed by the terms of a brownfield site

mg/l leachable lead associated with 1 of the samples (AB-4), approaching the TCLP limit of 5 mg/l threshold for hazardous material[7 (Appendix G)].

During 5/91, Law Engineering collected several additional 10-15 foot deep soil samples from the eastern half of the site. Eleven of 15 follow-up soil samples, collected throughout the eastern half of the site, yielded total lead concentrations (970-15,000 mg/kg) exceeding the current FDEP Soil Cleanup Target Level (SCTL) of 920 mg/kg[7 (Appendix G), 11]. However, TCLP testing was not conducted on soil samples[7 (Appendix G)].

Soil samples were collected at more shallow depths during 7/31/91. Seven of 8 samples contained total lead concentrations exceeding the SCTL, including a lead concentration of 16,000 mg/kg in shallow soil sample (depth = 2-4 feet) collected near the northernmost part of the eastern half of the site. Also, leachable lead generated by 2 samples (7.6 and 6.6 mg/l in samples T-3 and T-17, respectively) exceeded the TCLP standard. Supplemental soil sampling conducted on 11/6/92, documented one violation of the TCLP standard with a leachable lead concentration of 5.6 mg/l (sample T-2B)[7 (Appendix G)].

In 5/94, in preparation for a building project that had been planned for the subject site, GLE Associates, Inc. (GLE) conducted a sampling investigation. The investigation was centered upon a tunnel that presently connects the JMH Logistics Center on the north side of NW 19th Street to the JMH central building on the south side of the street. The purpose of the investigation was to determine if pre-existing on-site activities have chemically compromised the condition of soils in the vicinity of the proposed building project[4 (p. 2)].

During the subject study, soil borings and monitoring wells were installed and ground water and soil samples were collected. Excessive arsenic concentrations (i.e., exceeding Maximum Contaminant Limits, or MCLs) were detected in an unfiltered sample (MW-2) collected in the immediate vicinity of the JMH Logistics Center. Excessive levels of lead were also detected in 2 unfiltered samples collected from wells located immediately north and south of NW 19th Street (MW-8 and MW-5, respectively) [4 (p. 2 & Fig. 1)]. Metals concentrations in corresponding filtered ground water samples contained metals concentrations that were below MCLs[4 (p. 2)].

With the appearance of heavy metals in unfiltered ground water samples, the 3 affected wells were resampled and split between DERM and GLE representatives. Follow-up analyses confirmed arsenic concentrations of 37 and 23 µg/l in MW-2 split samples concurrently analyzed by GLE and DERM, respectively. Federal and State MCLs for arsenic are both 50 µg/l [14,15]. The concentrations of lead detected contemporaneously detected in MW-5 and MW-8 (13 & 9 µg/l , respectively) were also below the 15 ug/l

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rehabilitation agreement pursuant to Chapter 62-785, F.A.C., and to the program specific contaminants of concern for sites being addressed under Chapter 62-770, F.A.C., Petroleum Contamination Site Cleanup Criteria, and Chapter 62-782, F.A.C., Dry-cleaning Solvent Cleanup Criteria; and to the treatment of soil at facilities permitted pursuant to Chapter 62-713, F.A.C., Soil Treatment Facilities.

MCL[4 (Appendix B),15]. Subsequent analyses revealed arsenic, cadmium, lead, selenium, zinc, and cyanide in on-site soil samples.

The Metropolitan Dade County Department of Environmental Resources Management (DERM) requested that the facility implement a Monitoring Only Plan (MOP) to provide additional information about the disposition of on-site ground water[3 (p. 1)]. The resulting collection and analyses of ground water samples demonstrated that all metals of concern were below minimum detection limits (MDLs), so DERM recommended no further action (NFA)[13]

4.0 Ground-Water Pathway

4.1 Hydrogeologic Setting

This site is situated on the Everglades geomorphologic feature, near the western edge of the Atlantic Coastal Ridge, within the Southern or Distal Geomorphologic Province of Florida. Three major hydrogeologic units are present in Dade County. These units include the surficial aquifer system, intermediate aquifer system/confining unit and the Floridan aquifer system [12-16].

The principal source of freshwater in Dade County is the surficial aquifer system. The Biscayne aquifer is the most productive unit of this system. The surficial aquifer system is composed of upper Cenozoic sediments that are hydraulically connected. The surficial aquifer system includes, in ascending order, the Tamiami Formation (Fm), Caloosahatchee Fm, Fort Thompson Fm, Key Largo Limestone, Anastasia Fm, Miami Limestone and the Pamlico Sand (undifferentiated Pleistocene-Holocene sediments) .The surficial aquifer system exists under water-table conditions and is found generally within 5 feet of land surface It is overlain by a thin veneer of peat, muck (a mixture of silt and very fine-grained decomposed organic matter) or sand. The surficial aquifer system is composed of limestone, sandstone, sand, shell, lime mud, silt, clay, claystone siltstone and an admixture of these materials. The surficial aquifer system ranges in thickness from 140 feet (southeast Dade County) to more than 280 feet (northeast Dade County) in eastern Dade County [12-15].

The principal source of recharge for the surficial aquifer system is local rainfall. During periods of low rainfall, the extensive canal system in Dade County provides a significant source of recharge. Discharge from the aquifer occurs by pumping and ground water flow into Biscayne Bay, the Atlantic Ocean and canals during the wet season. The regional ground water flow in Dade County is generally east or southeast toward the Atlantic Ocean. However, the presence of active well fields, surface water control canals and tidal fluctuations commonly cause local deviations in the regional flow pattern [12-15].

The average transmissibility of the Biscayne aquifer unit ranges from 3 to 5 million gallons /day/foot. Yields from wells (6 inch wells) range from 1,000 to 1,500 gallons/minute. Water from this aquifer is generally colored either with organic material or iron in the

upper part of the aquifer. Excessive amounts of iron are encountered in some parts of the aquifer. [12-14].

The Tamiami Fm consists of sediments of upper Pliocene age ranging in composition from pure quartz sand to nearly pure limestone. The limestone is generally white to gray in color. The Tamiami Fm consists of the Pinecrest Sand, Ochopee Limestone and the Buckingham Limestone Members. These facies of the Tamiami Fm occur over a wide area of southern Florida. The lower part of the formation in Dade County is composed of gray to green, very coarse to fine grained, shelly sand and sandstone to cream, white and greenish-gray clayey marl, silty and shelly sands and shell marl, locally hardened to limestone. The lower part of this formation forms the upper portion of the intermediate aquifer system/confining unit [12-15].

The Pleistocene age Caloosahatchee Fm consists of fossiliferous quartz sand with variable amounts of carbonate matrix interbedded with variably sandy, shelly limestones. The sediments show a wide range of induration (nonindurated to well indurated). This unit also contains fresh water limestones. However, this unit is not often encountered while drilling in Dade County [12,13,15].

The Fort Thompson Fm consists of interbedded shell beds and limestones. The shell beds are generally variably sandy and slightly indurated to nonindurated. The sandy limestones within the Fort Thompson Fm were deposited under both fresh water and marine conditions. The Fort Thompson Fm. is a major component of the highly permeable Biscayne aquifer in Dade County [12,13,15].

The Anastasia Fm consists of interbedded quartz sands and coquinoid limestones of Pleistocene age. The sand beds are composed of fine to medium grained, variably fossiliferous, calcareous, quartz sand. The limestone beds (coquina) are composed of mostly broken/abraided mollusk shell fragments, scattered whole shells and quartz sand enclosed in a calcareous matrix. This matrix usually consists of sparry calcite cement. [12,13,15].

The Miami Limestone (Pleistocene age) consists of an oolitic facies and bryozoan facies. The oolitic facies underlies the Atlantic Coastal Ridge southward from southern most Palm Beach County to southern Dade County. The oolitic facies consists of variably sandy limestone composed primarily of oolites with scattered concentrations of fossils. The bryozoan facies underlies and extends west of the western boundary of the oolitic facies. The bryozoan facies consists of calcareous bryozoan colonies imbedded in a matrix of ooids, pellets and skeletal sand. It is commonly found as a variably sandy, recrystallized, fossiliferous limestone [12,13,15].

The Key Largo Limestone of Pleistocene age consists of a coralline limestone composed of coral heads in a calcarenite matrix. This formation outcrops from Soldier Key in Biscayne Bay to Bahia Honda.[12,13,15].

The undifferentiated sediments (Pamlico Sand) are a late Pleistocene age terrace deposit of marine origin. These sediments are composed of white to black or red, very fine to coarse, mostly medium grained quartz sand with varying amounts of iron oxide. This deposit mantles large areas underlain by the Miami Limestone and Anastasia Fm. [12,13,15].

The Intermediate aquifer system/confining unit consists of the relatively impermeable marl; greenish-gray, sandy clay and silt units located in the lower part of the Tamiami Fm (Pliocene age) and Hawthorn Group (Miocene age). Well sorted medium grained sands interbedded with claystones or siltstones yield low to moderate quantities of water. This intermediate confining unit underlies the surficial aquifer system to a depth 975 feet in eastern Dade County and forms the upper confining unit for the Floridan aquifer system [12,16].

The Miocene age Hawthorn Group consists of the Arcadia and Peace River Fms in southern Florida. The Peace River Fm is composed of interbedded quartz sands, clays and carbonates. The carbonates consist of variably sandy, clayey phosphatic limestones and micro- to very fine crystalline, variably sandy phosphatic dolostones. However, the siliciclastic portion of the formation predominates. The Arcadia Fm. consists of predominantly limestone and dolostone with varying amounts of quartz sand, clay and phosphate grains. Dolomite is the most abundant carbonate component of the Arcadia Fm. The Hawthorn Group is found approximately 150 feet below land surface (bls) and is approximately 750 feet thick in the site area [15,16].

The artesian Floridan aquifer system is composed of carbonate and evaporite units ranging from Eocene to Oligocene age. The Floridan aquifer system consists of, in ascending order, the Oldsmar Fm, Avon Park Fm, Ocala Limestone and the Suwannee Limestone. The top of the Floridan aquifer system is found approximately 1,000 feet bls and the aquifer is about 2,600 feet thick in northeastern Dade County. Water from the Floridan aquifer system is highly mineralized and unsuitable for potable water supplies in Dade County [14,15].

The Eocene age Oldsmar Fm consists of primarily limestone interbedded with vuggy dolostone. The lower part of the section is usually more dolomitized than the upper part. Gypsum may occur as thin beds and within pores in some places of the formation [15].

The Avon Park Fm is composed primarily of middle Eocene age fossiliferous limestone interbedded with vuggy dolostone [15].

The upper Eocene age Ocala Limestone consists of muddy (carbonate) to finely pelletal limestone in southern Florida. However, the Ocala Limestone may be absent in portions of southeast Florida [15].

The Suwannee Limestone of Oligocene age consists primarily of variably vuggy and muddy (carbonate) limestone (grainstone to packstone) in southern Florida [15].

4.2 Ground-Water Targets

The only potable well identified within 4 miles of the site is owned by the National Park Service. The well is located across Biscayne Bay, on Elliot Key. The interposition of the Bay is sufficient to preclude the well as a potential ground water target[20].

4.3 Ground-Water Conclusions

Soil samples collected from areas of ash landfilling exceeded TCLP standards for lead[7]. MCL violations were also documented for lead and arsenic. However, the contaminated soils were removed and no potable wells are located within 4 miles of the site. Therefore, the influence of the Ground Water Migration Pathway upon the perceived disposition of the site is inconsequential.

5.0 Surface Water Pathway

5.1 Hydrology

The site is located at an estimated elevation of 15 feet above mean sea level[1] and outside of the 100-year flood zone[11]. Numerous storm drains have been identified on the eastern half of the site[7 (Fig. 4)]. The storm drains logically direct site runoff approximately 2,000 feet southwestward to Wagner Creek, a small tributary of the Miami Canal. The Miami Canal flows southeastward from the mouth of Wagner Creek at an estimated rate of 251 cubic feet per second[1,11]. The canal empties into Biscayne Bay approximately 1.5 miles from the confluence of Wagner Creek. The nearest interface with the Atlantic Ocean is encountered 3 miles of the mouth of the Miami Canal.

The Miami Canal is tidally influenced, as far upstream as 1 mile northwest of the site (i.e., salinity control structure S-26)[1,11]. Accordingly, estuarine conditions persist throughout Biscayne Bay and the lower Miami Canal (up to the S-26 salinity control structure). Waters lying seaward of the bay are generally characterized as stenohaline.

5.2 Surface Water Targets

The Miami Canal and Biscayne Bay are critical habitats of the Federally-designated Endangered West Indian Manatee (Trichechus manatus latirostris). The Bay also supports numerous recreational fisheries, including: red snapper, Florida pompano, snook, bluefish, permit, bonefish, great barracuda, and silver perch. An exclusively commercial fishery for white mullet has also been identified within the bay. Bay species exploited both as sports and commercial fisheries include the stone crab; spiny lobster; king mackerel; Cero mackerel; mutton, gray, lane, and yellowtail snappers; red grouper; grunt; and Jack Crevalle[27,29,30].

5.3 Surface Water Conclusions

On-site soils containing high levels of leachable lead were documented and subsequently removed[7]. These areas of confirmed contamination are principally paved[21], allowing minimal contact between storm water runoff and the underlying contaminated soils. This partitioning principle also minimizes the influence of contaminated soil on ground water quality.

If significant quantities of site-attributable leachable lead have been carried to Wagner Creek (via overland or ground water to surface water discharge), the development of toxicologically significant conditions is dubious in these relatively remote and tidally influenced surface waters. Therefore, at the present time, site-attributable contamination is not likely to significantly affect the multiple fisheries and sensitive environments that exist within the surface water migration pathway.

7.0 Summary and Conclusions

The site comprises a former municipal incinerator and a series of closed ancillary ash landfills, located in a highly urbanized area of Miami, Florida[1]. TCLP standards for leachable lead were exceeded in on-site subsurface soil samples[3-7]. The contaminated soils were consequently removed[4] and the affected areas are currently fenced[21]. Arsenic and lead exceeded MCLs in on-site ground water samples were collected[4], however, no potable wells are located within 4 miles of the site[20].

On-site runoff logically is sequentially directed toward Wagner Creek, the Miami Canal and Biscayne Bay[1]. Numerous fisheries and sensitive environments were identified within these surface waters. However, all downstream surface water bodies are tidally influenced [19,23] and unlikely to develop toxicologically significant levels of site-attributable contaminants. In addition, surfaces in areas of documented contamination are paved or covered by commercial or industrial buildings (no residences are within 200 feet of known sources), so soils are generally inaccessible to storm water runoff, infiltrating rainfall and direct contact with individuals.

Paved surfaces and commercial or industrial buildings, predominate throughout the vicinity of the site. Accordingly, the subsurface leachable lead is inaccessible to contact with both individuals and storm water runoff. Thus, any attempt to remove the contaminated soils would disrupt the continuity of impermeable paved surfaces, allowing more interaction between subsurface lead and the ground water, surface water and soil exposure pathways. Therefore, a **no further action priority is recommended** because a removal would probably create more exposure problems than such a removal would solve.

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